

LEPROSY AND LEPROSY TREATMENT IN BASUTOLAND

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HISTORICAL

It seems certain that leprosy was unknown in Basutoland when European missionaries first came to the Territory, a century ago. Dr. Neil M. Macfarlane, lately principal medical officer, who spent thirty-five years of his life (1893-1928) in the medical service there, showed in a paper read at the Second International Leprosy Conference at Bergen ⁽¹⁾ that the disease was introduced by the Griquas when in 1861-1863, under Adam Kok III, they trekked from the Orange Free State through Basutoland to the territory which is now called Griqualand East. The heavier incidence of leprosy in the east and southeast of Basutoland he attributed to the immigration of Griqua refugees from Griqualand East when compulsory segregation was introduced in Cape Colony. The Griquas, it may be explained, are a people of mixed Hottentot and Dutch race. Leprosy was observed among the Hottentots at the Cape in the eighteenth century.

In 1891 official notice was taken of the fact that leprosy was spreading in Basutoland, and in 1894-95 the then principal medical officer, Dr. Long, caused a registration of known lepers in the Territory to be made. Dr. Macfarlane has informed me that this revealed the existence of not more than two hundred patients. At that time some of the chiefs had instituted a mildly compulsory segregation of lepers with their families in various villages in their own districts. Under such a system the inducement to conceal the disease could not have been nearly so strong as it became afterwards when a leper asylum was built (1914) in which the patients were segregated from their families, in most cases far from their homes. The chiefs' system, Dr. Macfarlane states ⁽²⁾, would have gone a long way to solve the problem at little cost, and would have been more in accordance with the methods generally advocated now. Unfortunately, because of mutual jealousy and suspicion on the part of the chiefs

regarding the alienation of land, the Government found it impossible to extend this segregation policy to all of them.

If it be true that adults are generally immune to infection, that the disease is nearly always contracted in childhood, and that the incubation period although often under five years is generally twenty or more years, our policy not only in South Africa but all the world over should undergo a profound change. So far as possible, under an efficient health visiting service, patients should be segregated from their families at their homes, and the children of leper women should be removed to be reared in an institution as soon as they are born. If the hypotheses mentioned above are true, a single compulsory segregation asylum would be justified neither on economic nor on public health grounds until we had a really specific remedy which would induce patients to come for a rapid cure. It is very important that this question should be settled beyond all doubt.

PRESENT SYSTEM

Basutoland is an inland territory having an area of about 11,000 square miles, mostly mountainous, with a mean altitude of 5,000 feet and mountains reaching to over 11,000 feet. There are few, if any, human habitations at altitudes greater than 8,000 feet. The climate is a very pleasant one, similar to that of the neighboring Orange Free State, but cooler and less dry. Most of the rain occurs in the spring and summer in the form of thunder storms. The winter is bright and dry, and sharp frosts at night are the rule from May to August. All too often droughts occur in the summer, leading to great scarcity and poverty.

The staple diet of the people consists of maize and millet. The former is eaten in the form of thick, bread-like porridge as well as in the green state in season, and the latter is consumed in a fermented beer in which the malted meal is suspended. The beer, which is drunk fresh, is mildly acid, intoxicating when taken in large quantities, and not unpalatable. They are inordinately fond of meat which, however, they cannot afford to eat except at marriages and feasts.

The leper asylum, admirably planned by Dr. Long and located four and a half miles from Maseru, was built early in 1914 and occupied by about 600 patients. Since that time it has been run on temporarily approved lines in respect to diet, hygiene, and medical

treatment, in so far as the patients have been willing to accept the last. A farm of 1,500 acres supplies milk, meat, fruit and vegetables to the institution. The dwellings, hospitals and dispensaries, arranged in separate compounds for males and females, consist of wood-and-iron military huts. Since the beginning of 1932 from forty to fifty convalescent patients have been kept at a village of native-style huts (round, built of stone, and thatched), situated a mile away from the compounds. Convalescents are drafted from the compounds to this village, and discharged as arrested cases from there. No intercourse between the convalescents and the patients in the compounds is permitted.

Until the beginning of 1929 the methods of detecting patients and bringing them to the asylum were most defective, too much being left to the chiefs and headmen, the result being that the spread of the disease was being controlled only to a very limited extent. Before that year the population of the asylum fluctuated between 440 and 520, but after the employment of trained native inspectors, two in 1929 and four more in 1930, there was a progressive increase. In 1929 the influx of new patients rose from 70 or 80 per annum to 187; by 1932 it had fallen to 133, but perhaps owing to famine conditions caused by the drought the fall was not maintained in 1933, the number admitted being 138. It is not improbable that in many cases malnutrition shortened the period of incubation, for 80 per cent of them were early cases.

The present population is 730, viz., 352 males and 378 females; 90 of them are children under 16 years of age attending school and 4 under five. The population has been practically stationary for a year, deaths and discharges balancing admissions.

The population of the territory being about half a million, it is probable that the incidence of leprosy at present is about 2 per 1,000. Of the 1,000 cases probably in existence, 730 are in the asylum, and the majority of the remainder are still in the incubation stage of the disease. The finding of an advanced case of many years' duration is now quite a rare occurrence, and this may be said to be the most considerable improvement brought about by the employment of inspectors. If the incubation period were generally not more than five years, one would have expected by 1934 a larger falling off in the number of new patients being found.

CHARACTER OF CASES

During the ten-year period, 1921-30, a total of 1,436 patients were in the asylum. These were classified as follows:

NEURAL CASES

N1	143	10.0 per cent	
N2	377	26.3 per cent	
N3	91	6.3 per cent	
Total	610	42.5 per cent	
CUTANEOUS AND MIXED CASES	826	57.5 per cent	
TOTAL	1,436		

The composition of the present population is more favorable, but we still have a large number of old incurable C3 and a greater number of arrested, deformed N3 cases. The latter are more tenacious of life than the former, but owing to this incubus of old advanced cases the death rate continues to be about 10 per cent of the whole population per annum.

For some years before 1929 the discharge rate was in the neighborhood of 30 per annum. Since 1929 it has gone up to 50 per annum, in spite of the fact that by the end of 1932 acceptance of injection treatment by the patients had come almost to the vanishing point. The improvement in the discharge rate is to be attributed to the much earlier stage of the cases sent in, rather than to the rejection by the patients of a treatment which was at least harmless. The rate is still increasing. During the past year intradermal injections of the iodized esters have been given and readily accepted on such a large scale in favorable cases that, if their present popularity continues, there will be no untreated controls among early cases to be used for statistical purposes except those which I have recorded in the past.

A fact which I have observed in a general way, and which is brought out by an analysis of the cases admitted during the past five years, is that the cutaneous and neural types never advance far together in a mixed case: there are no representatives of classes C3-N1, C3-N2, C3-N3, or C2-N3. Some writers refer to cutaneous cases as if they were more advanced (because less tractable?) than nerve ones. Here we get early cases of both, and the most advanced cases of both seem to belong to two different diseases. Most of our

crippled and mutilated patients show no trace of the cutaneous form of the disease. In advanced cutaneous, severely nodular cases we often find on the outer sides of the legs between the knee and ankle, large ulcers which do not respond to antisyphilitic treatment, without a trace of paralysis, contracture or mutilation of hands or feet. In these cases the skin of the dorsa of hands and feet is soft, velvety and puffy without oedema, signs which the late Dr. Slack came to regard as bad, indicating intractability and progress in the wrong direction. In smears from these ulcers we fail to find acid-fast bacilli. They seem to be trophic in a more direct sense than that associated with nerve defects, i.e., due to atrophy of the subcutaneous blood vessels. They usually heal best when left for some weeks undisturbed under a strip of elastoplast.

Dr. Slack often remarked on the absence of anesthesia in macules on the trunks of patients whom he classed as pure nerve cases, in which his diagnosis was confirmed by the subsequent history; indeed, he said that here anesthesia of the trunk macules was rare, even when it was well-marked on the extremities. Klingmüller (3a) states that in these macules nerve disturbances of any kind may not appear for a considerable time. It seems as if neither the absence of anesthesia nor the presence or absence of symmetry of distribution can be relied upon as distinguishing features between types C1 and N1, and in doubtful cases we must have recourse to a bacteriological test, viz., the presence or absence of acid-fast rods in skin snips (4).

TREATMENT

Here I propose chiefly to draw attention to a statistical analysis of the results of treatment by injections of chaulmoogra or hydnocarpus oils and their derivatives during the ten-year period, 1921-1930. A detailed analysis of the treatment of Cases N1 and N2 was given in a previous article (5). Of that analysis a summary is here reproduced for comparison with that of the cutaneous and mixed groups, which has now been completed.

NEURAL CASES

The results obtained in the N1 and N2 cases taken together are shown in the first part of Table 1. Because no positive association between treatment and arrest of the disease is shown by those figures an analysis of the N1 cases is given separately.

In the figures for the N1 group we find a positive association between injection treatment and arrest, but the most remarkable feature of the analysis is the large percentage of arrests among cases with practically no injection or, indeed, any *ad hoc* treatment of leprosy, a fact which has only recently come to be recognized. The frequently repeated statements of the past that "once a leper, always a leper" and that "the outlook of the untreated case is hopeless" had no foundation in fact, and were based on the observation of late cases only. The early ones were either not observed or were not brought under treatment when observed, so that there were no controls with which to compare the treated cases.

TABLE 1.—Results of treatment of the combined N1 and N2 groups, and of the N1 group alone.

Amount of treatment given	N1 and N2 groups			N1 group alone		
	Number of cases	Arrested		Number of cases	Arrested	
		No.	Per cent		No.	Per cent
Trivial or nil (Less than 10 injections given in total)	112	59	52.7	39	24	61.5
Inadequate (Less than 20 injections in six months)	307	128	41.7	75	59	78.7
Adequate (More than 20, of which 20 in six months)	520	236	43.5	29	23	79.2

When preparing the article quoted above I did not consider it worth while to make a detailed analysis of the cutaneous and mixed cases, in which the results of treatment are well known to be poor.¹ However, the data shown in Table 2 were given.

¹In my former paper, quoted above, I made a comparison between our statistics of treatment and those of Culion, which I find was an unfair one. Whereas all types of cases have been admitted and treated at the Basutoland Leper Asylum, only bacteriologically positive cases (i. e., chiefly cutaneous and mixed) are isolated in the Philippine leprosaria under the regulations in force there. Pure nerve cases, being regarded as of low infectivity, are not admitted.

This analysis was very incomplete and misleading in two respects: (a) in both groups there was no analysis of the amounts of treatment accepted, and (b) the 365 with nil or trivial treatment were for the most part very advanced and were not urged or even en-

TABLE 2.—*Results of treatment of cutaneous cases.*

Group	Number treated	Arrested	
		Number	Per cent
All cutaneous cases given treatment ..	461	61	13.2
Those with trivial or no treatment ...	365	14	3.8
C1 cases only, treated	168	36	21.4

couraged to accept injection treatment. The 3.8 per cent of arrests among this untreated group is not comparable with the 21.4 per cent among the treated C1 cases, for they belong to very different categories.

CUTANEOUS CASES

In the following analysis of the cutaneous and mixed cases the classification is made with reference to the C element only, that being regarded as the more refractory to treatment of the two. Of the total of 461 cases treated, 19 have been rejected because the records as to classification or treatment were incomplete. A total of 75 cases have been brought to the arrested stage, but 15 have had to be rejected for similar reasons. In the former analysis of the C1 cases 168 were considered to have been treated more or less adequately. The present analysis, including as it does cases with under 20 injections, brings the number of treated C1 cases up to 231. The analysis is shown in Table 3. From the figures arrived at there appears to be no consistently positive association between treatment and arrest in any group except the C3, which is rather small for statistical purposes.

In assessing the value of a treatment by the statistical method here used certain incalculable psychological factors have to be considered. A positive association having been found, is it a case of cause and effect, or are both the effects of a common cause? If it is a case of cause and effect, which is the cause and which the effect? Does the patient recover because he has accepted much treatment, or did he accept much treatment because he was recovering spontaneously?

In defense of the standpoint of those who still believe that these injection treatments are of great value it must be confessed that the amounts of treatment accepted here were in general very meager. The largest number of injections accepted by any individual was in the C1 group, viz: 193. Unfortunately in this case arrest did not take place. By the end of 1932 so great was the loss of faith in injections among the patients that Dr. R. Germond, the present medical officer, stated in his report that the leper asylum might be considered to have ceased to be a treatment center.

TABLE 3.—*Analysis of effects of treatment in cutaneous and mixed cases, classified according to the cutaneous element.*

Case group, and amount of treatment given	Number of cases treated	Arrests	
		Number	Per cent
C1 cases, total	231	49	21.2
Less than 10 injections	39	8	20.5
10 to 29 injections	82	19	23.2
30 or more injections	110	22	20.0
C2 cases, total	161	10	6.2
Less than 10 injections	27	0	0.0
10 to 29 injections	52	4	7.7
30 or more injections	82	6	7.3
C3 cases, total	50	1	2.0
Less than 10 injections	13	0	0.0
10 to 29 injections	14	0	0.0
30 or more injections	23	1	4.3
TOTAL	442	60	13.6

It is greatly to his credit that since that date he has made the newer intradermal treatment with the multiple injections of iodized esters into the local skin lesions so popular that there are 120 patients accepting it with great regularity. This treatment entails a great deal of patient work, sometimes as many as forty punctures being made in one patient at one sitting. The patients have always had faith in the treatment of local lesions, whether with trichloroacetic acid or with carbonic acid snow. In some cases Dr. Germond finds that these injections, besides causing the local lesions to disappear, have a general or what the Germans call a distant action, untreated local lesions subsiding. J. T. Wayson, who was the first to recommend it, and some German writers have attributed a similar distant

action to carbonic acid snow. Among these may be mentioned Paldrock and Sülk (^{3b}), Kuriks, Citovic, Naumov and Paldrock (⁶). Here, in a small number of cases, carbonic acid snow gave remarkably good results. It is to be feared that the intradermal method also is only a fair-weather treatment. Dr. Germond rightly confines it to the earlier and less acute cases, fearing that its general recommendation and acceptance will only discredit it, for he finds that when lesions are acute the injections tend to aggravate and spread them.

Various other injection treatments were tried out with thoroughness in small numbers of individual cases, with inconclusive or disappointing results. Among these may be mentioned cupro-cyan, so-called vaccines, and in acute febrile cases antimony salts, mercurochrome and diemenal.

CONCLUSION

The chief objection to the present policy is its great expense. If expense were no object a continuation of the present policy, combined with an enlarged inspectorate and, most important, the spread of education and improvement in the economic status of the people, would in time eradicate the disease. How long this would take depends upon the average incubation period, which is at present doubtful.

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